

WHAT IS CLAIMED:

1. A method of removing nitrogen-rich inclusions from a titanium containing electrode, comprising the steps of: contacting a bottom surface of the titanium containing electrode with a flux in a crucible; passing a sufficient amount of electric current through the electrode and flux to melt the bottom surface of the electrode while resistively heating the flux at a temperature that melts the bottom of the electrode; and dissolving the nitrogen-rich inclusions exposed to the flux by maintaining a nitrogen partial pressure in the flux lower than that in the inclusion.
2. A method according to claim 1 where the flux is a halide flux.
3. A method according to claim 2 where the halide flux is a calcium halide flux.
4. A method according to claim 3 where the calcium halide flux is calcium fluoride.
5. A method according to claim 2 where the halide flux contains dissolved metals or oxides or *métals* and oxides.
6. A method according to claim 5 where the metal is calcium metal.
7. A method according to claim 6 where the calcium metal is present in the flux in an amount of about 1 to 4.5 weight percent.
8. A method according to claim 1 where the nitrogen-rich inclusion is a titanium nitride core surrounded successively by a layer of alpha-titanium and a layer of beta-titanium.
9. A method according to claim 1 where the flux is resistively heated at a temperature above about 1500 C.
10. A method according to claim 9 where the flux is heated above about 1650 C.
11. A method according to claim 1 where the electrode and flux are contained in a non-oxidizing environment.